

NASA's Participation in Joint SatOPS Compatibility Efforts 2009-2010

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Introduction

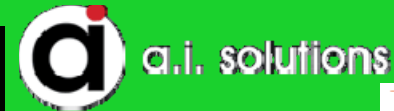


- ◆ Many U.S. government organizations build or fly space systems:
 - ❖ NASA, NOAA, Navy, Air Force, NRO, ORS. Others?
 - ❖ Through the Joint SatOps Compatibility Committee (JSCC) we have increased the grass-roots interaction between many of these organizations
 - ❖ We all deal with many of the same challenges
 - ✦ More rapid deployments, lower budgets
 - ✦ Advancing technologies – frameworks, clouds, virtualization
 - ✦ Evolving concepts – automation, situational awareness, enterprise mngt.
 - ✦ Standardization – formal or by common use
- ◆ “There is an inherently governmental role in creating the business case for contractors and commercial product vendors to move in directions beneficial to multiple government space organizations.”

NASA/GSFC's "GMSEC" Architecture



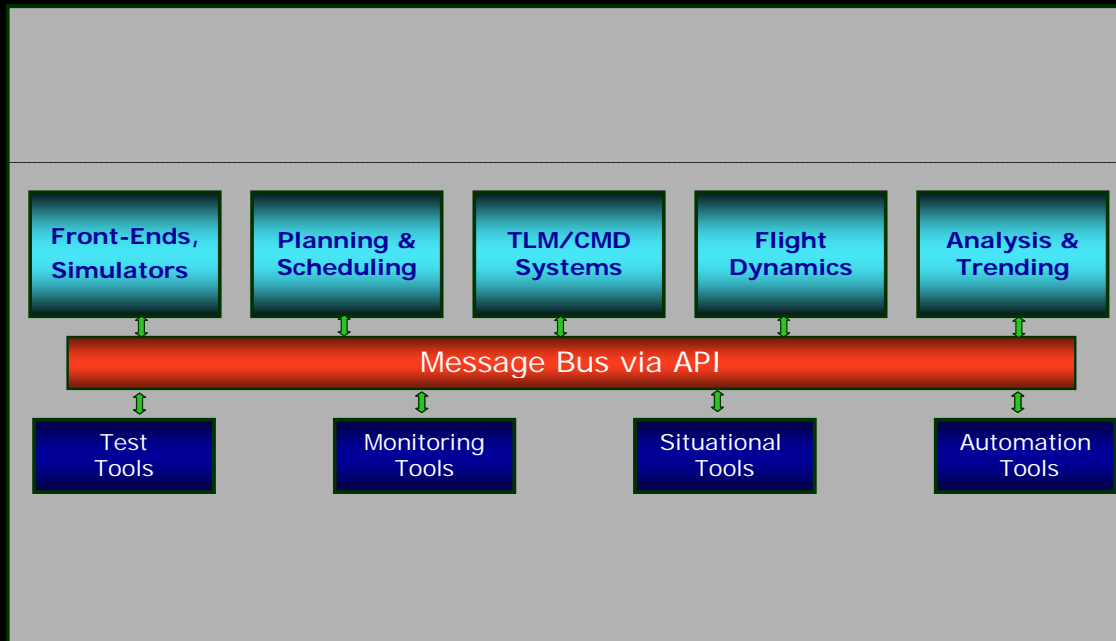
MSFC



Avtec Systems



DesignAMERICA



The Goddard Mission Systems Evolution Center (GMSEC) provides a publish/subscribe framework to enable rapid integration of commercially available satellite control products.

NASA/GSFC's Efforts Since GSAW 2009 (1 of 2)



- ◆ Supported establishment of Joint SatOPS Compatibility Committee following GSAW 2009
 - ❖ Primary NASA participation from NASA Headquarters and NASA GSFC
 - ❖ GSFC GMSEC Team and Standards Group participation

- ◆ Continued development of the GMSEC system
 - ❖ Proof of concept labs running at other JSCC locations
 - ❖ NASA continues to fund basic system development and maintenance
 - ✦ Introduced IBM's Websphere as a pub/sub communications bus
 - ✦ Adding local environmental monitoring (temp/humidity, etc.)
 - ❖ Collaborations started for GMSEC core enhancements
 - ✦ Enterprise communications
 - ✦ Security
 - ✦ NDDS as a pub/sub communications bus

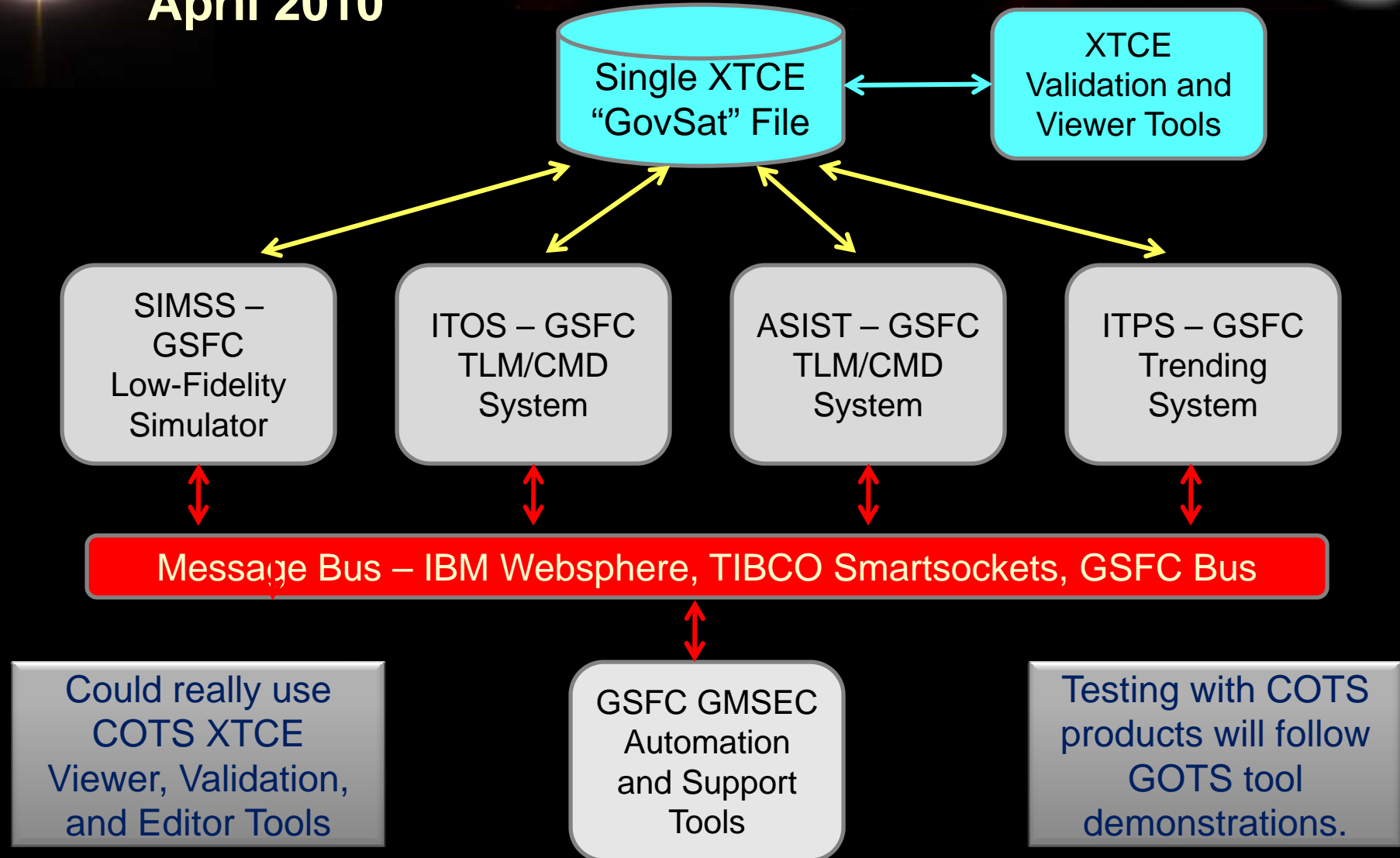
NASA/GSFC's Efforts Since GSAW 2009 (2 of 2)



- ◆ Pushed for the adoption of XTCE for TLM/CMD list definitions
 - ❖ Proceeded with plan presented at GSAW 2009
 - ❖ Developed “GovSat” – a tailored XTCE subset for CCSDS missions
 - ✦ Documented limited set of XTCE-compliant capabilities and approaches
 - ✦ Added field constraints
 - ✦ Created populated database for consistent testing
 - ✦ Preparing for general industry release of GovSat materials
 - ❖ Modified GSFC-internal products to utilize XTCE definitions
 - ✦ Full test planned for April 2010
 - ❖ Encouraged use of XTCE for upcoming missions
 - ✦ Missions at several NASA Centers now considering XTCE
 - ✦ ORS and Naval Research Labs will soon be testing with XTCE
 - ❖ Will encourage industry participation in 2010
 - ✦ Adapters need to COTS tools can accept XTCE files
 - ✦ New XTCE support tools suites needed

NASA/GSFC XTCE “GovSat” Validation Test

April 2010



Now What?



- ◆ NASA believes in the value of the JSCC
 - ❖ Let's keep it going as a broad forum

- ◆ Time for increased industry participation
 - ❖ JSCC should consider position papers for future direction
 - ❖ Forums like GSAW used to describe new directions

- ◆ Work on common challenges
 - ❖ Enterprise level situational awareness
 - ❖ Security
 - ❖ Increased use of inter-agency sharing and COTS

- ◆ Broad acceptance of standards
 - ❖ CCSDS packetized data
 - ❖ XTCE
 - ❖ Delay/Disruption Tolerant Networking (DTN)